

(12) UK Patent Application (19) GB (11) 2 069 767

A

(21) Application No 8100404
(22) Date of filing 8 Jan 1981
(30) Priority data
(31) 3004271
(32) 6 Feb 1980
(33) Fed Rep of Germany (DE)
(43) Application published
26 Aug 1981
(51) INT CL³
H05K 5/00
(52) Domestic classification
H1R BL
(56) Documents cited
None
(58) Field of search
B8P
H1R
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(54) Modular housing

(57) A modular housing for junction and distributor boxes for the accommodation of exchange and switchboard equipment having a base unit 1 and a lid unit 5 made up from snap fitting unit elements of suitable size, the housing being adapted for surface or wall fixing, and the housing being arranged for assembly to make up housing systems of any desired size which perform in the manner of a single housing by omission or exchange of elements of the lid units 5, each lid unit 5 being individually removable.

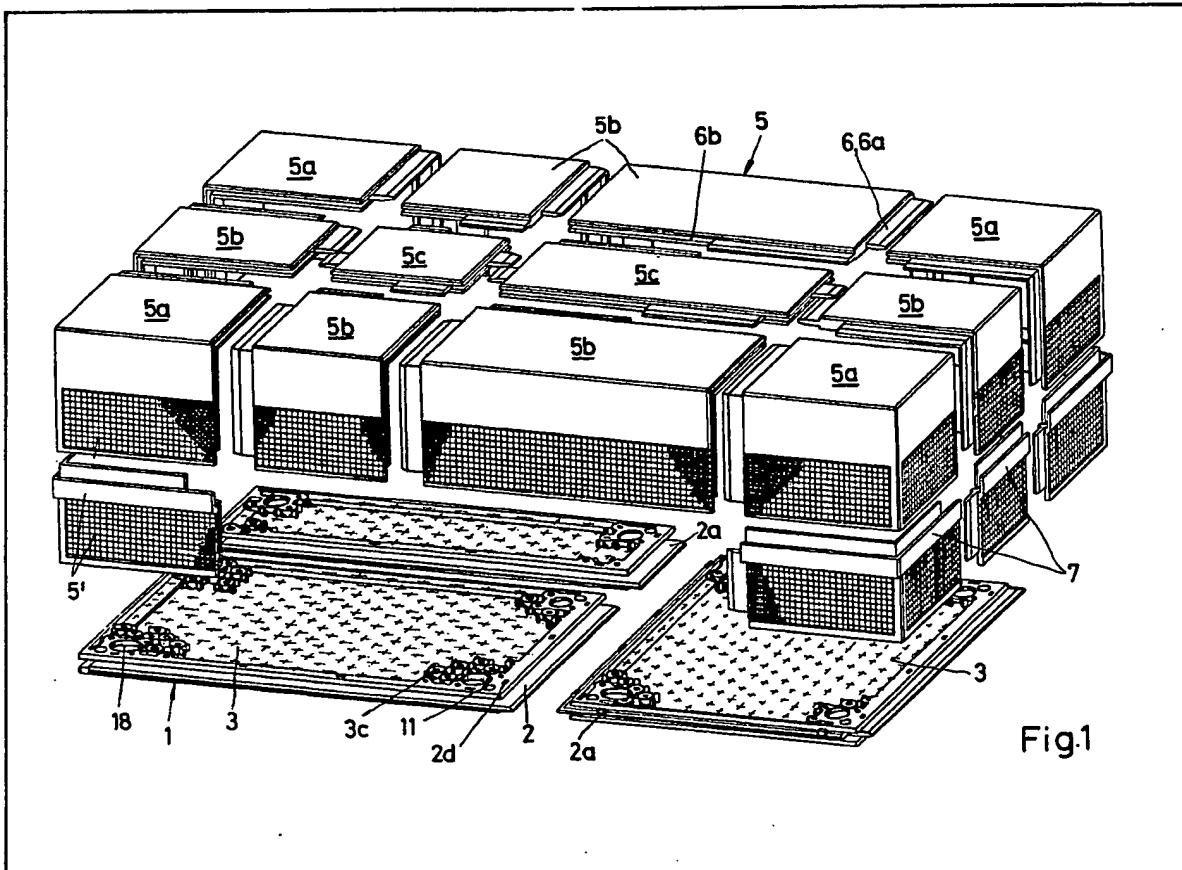


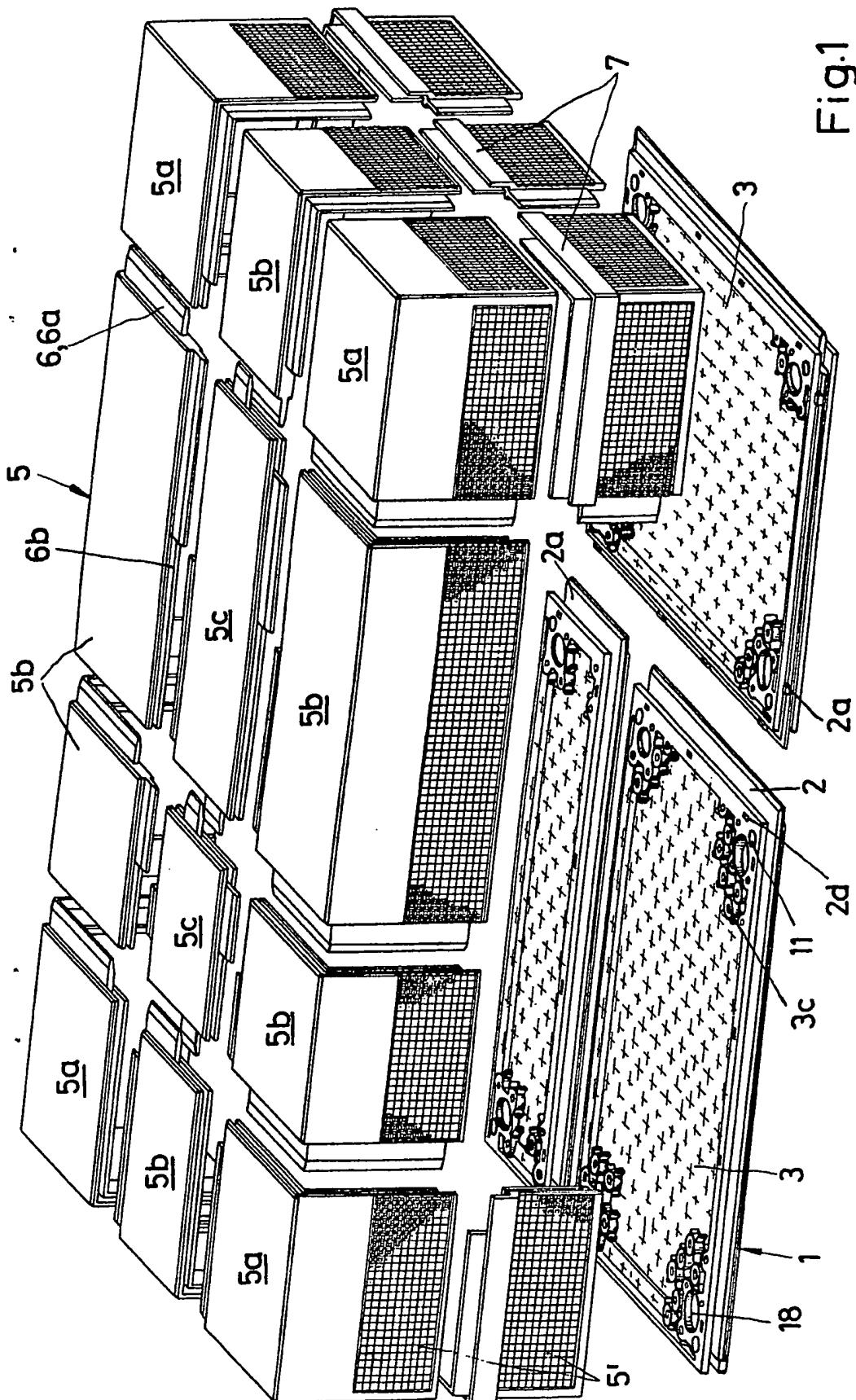
Fig.1

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Fig.1



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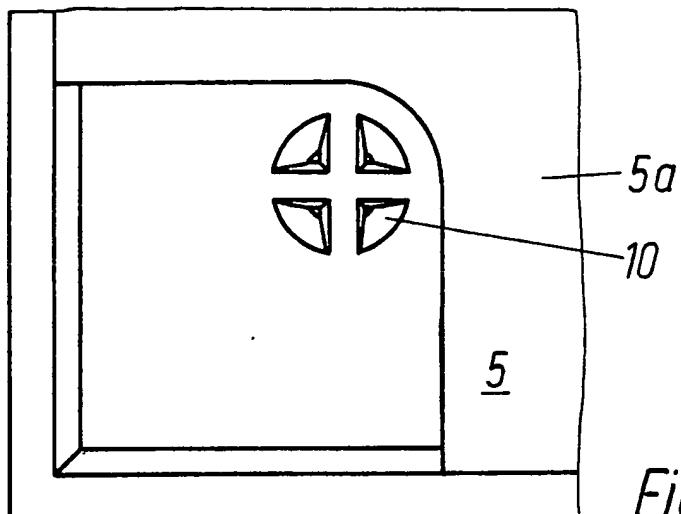


Fig. 2a

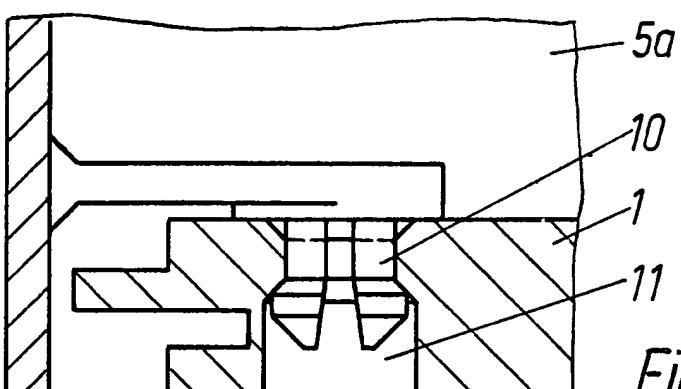


Fig. 2

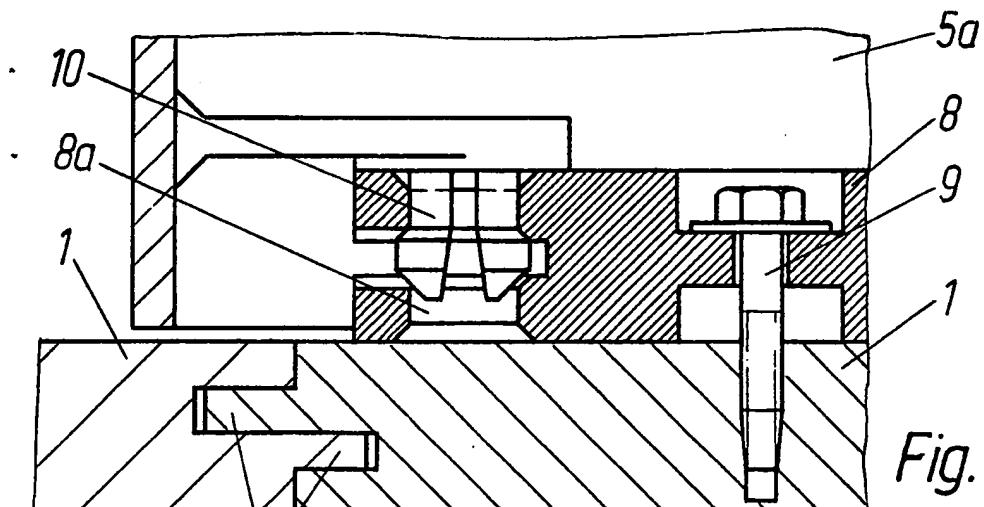


Fig. 2b

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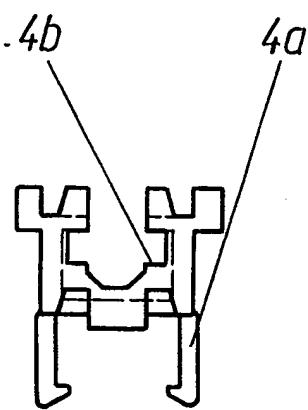


Fig. 3b

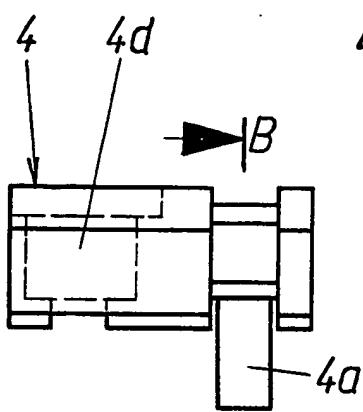


Fig. 3

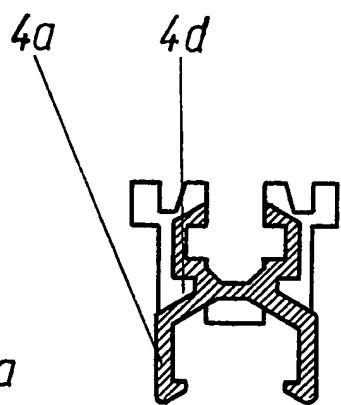


Fig. 3a

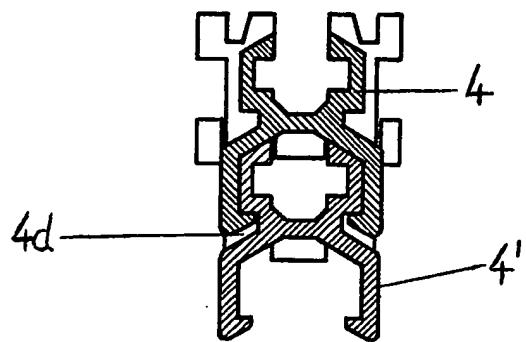


Fig. 3c

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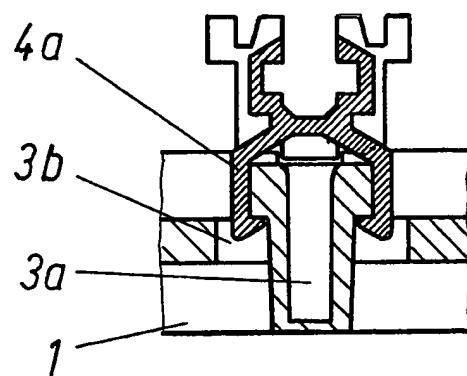


Fig. 4

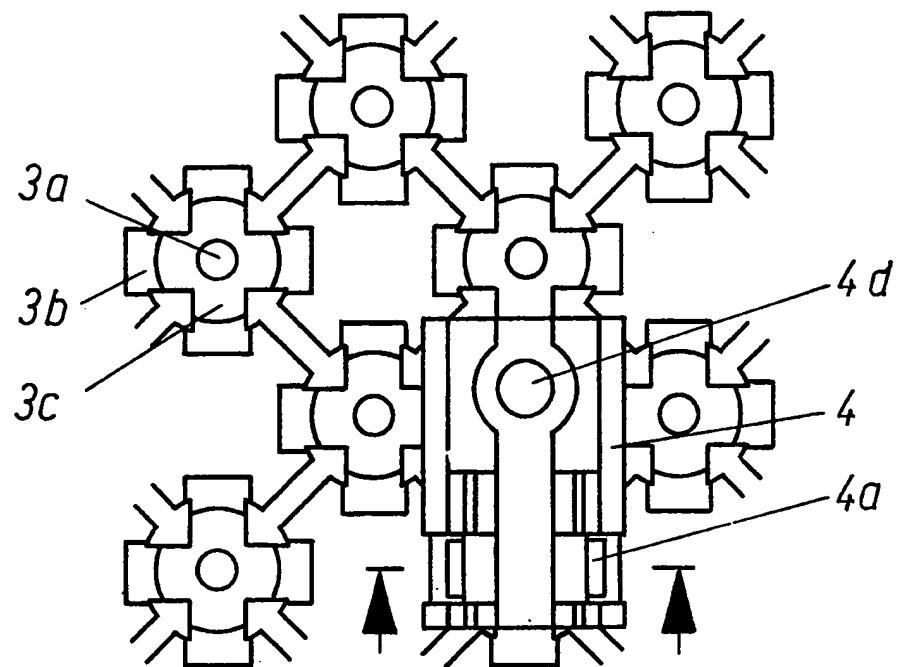


Fig. 5

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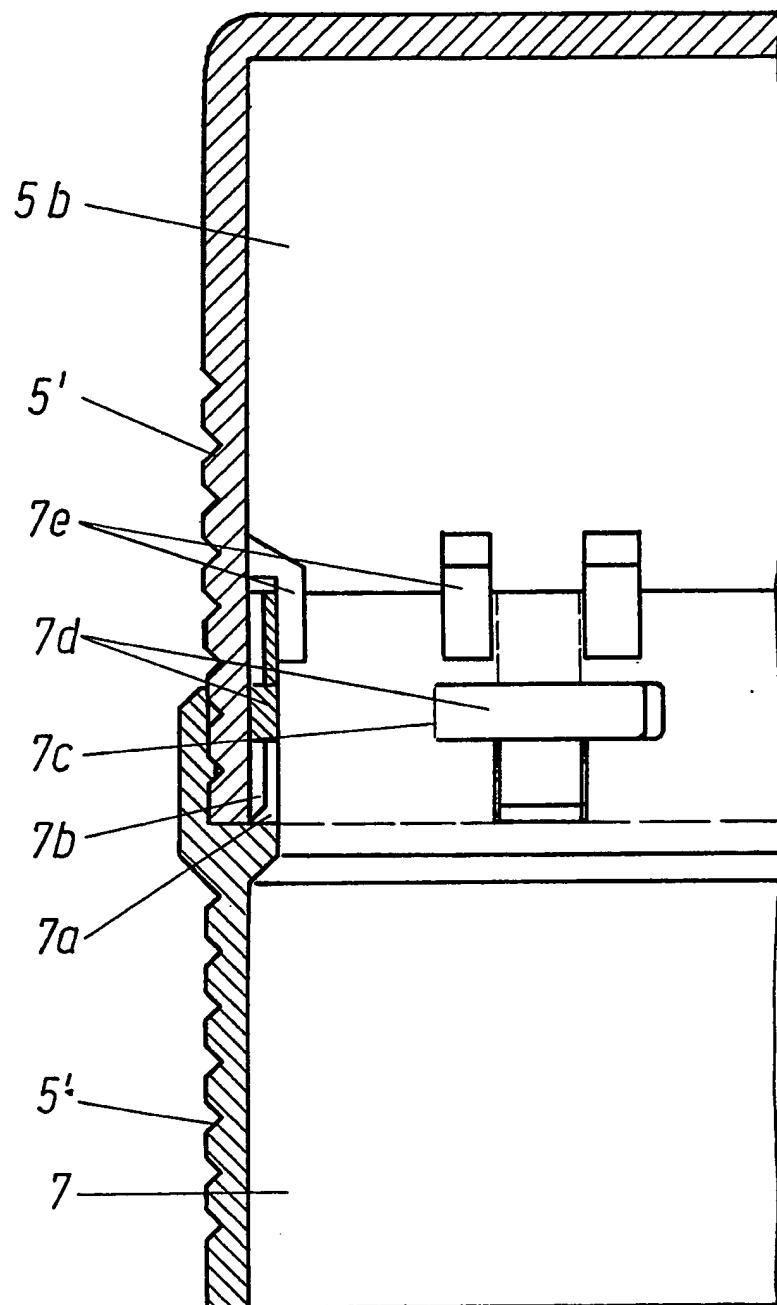
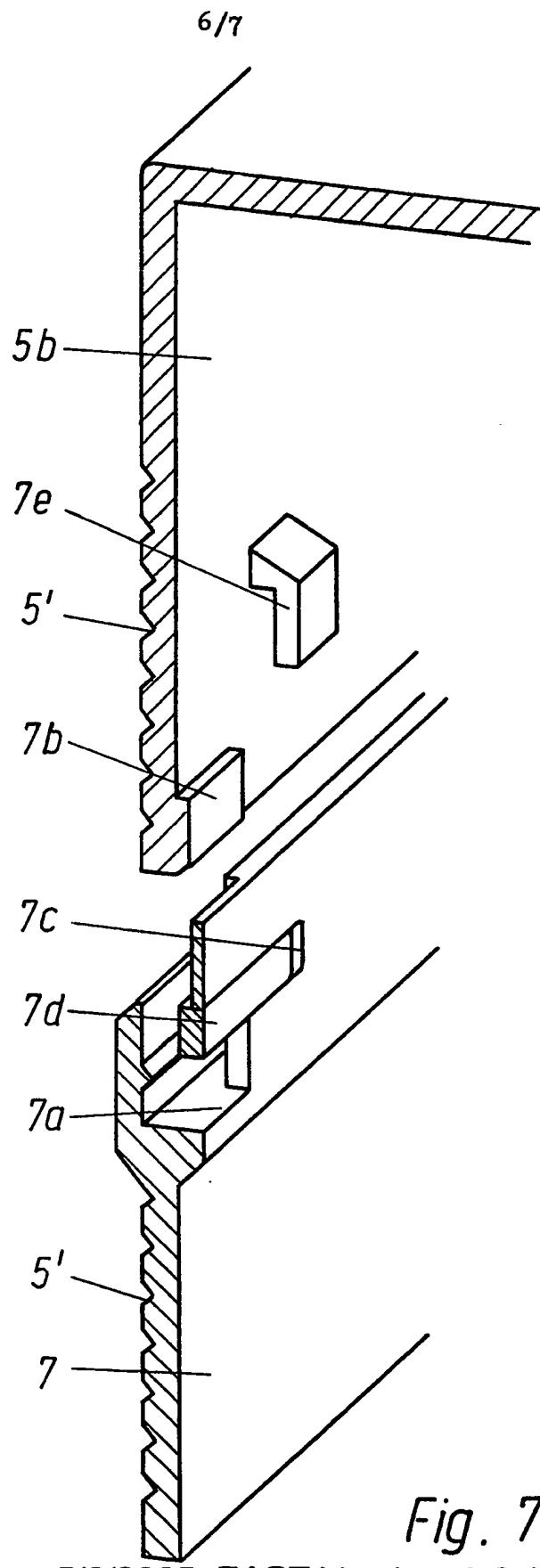


Fig. 6

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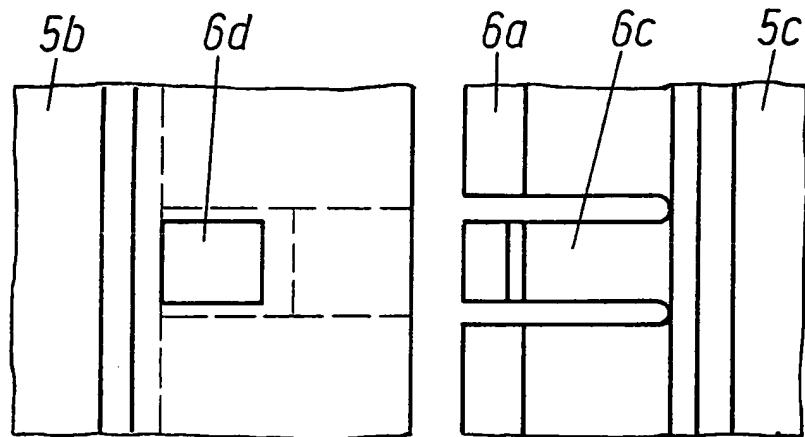


Fig. 8

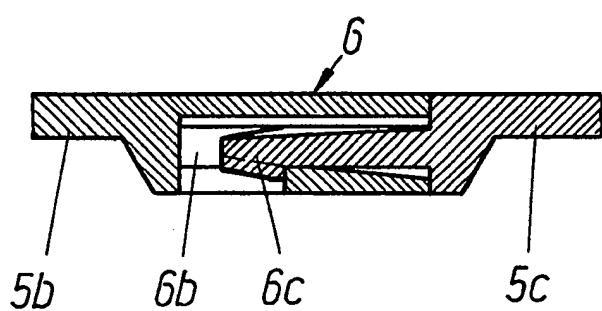


Fig. 8a

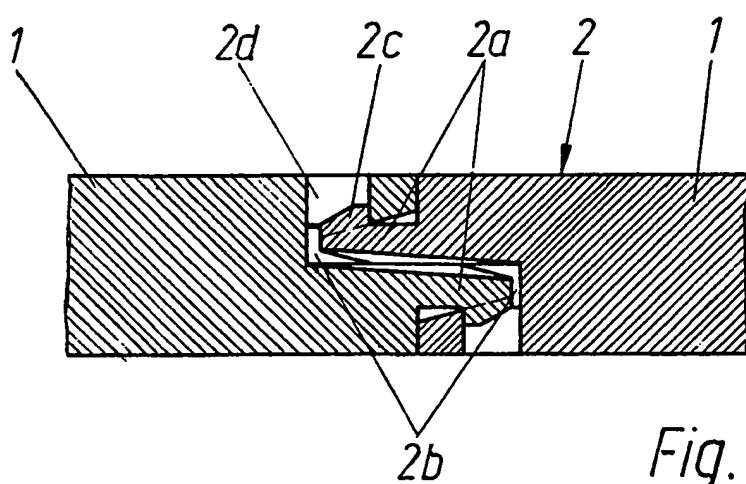


Fig. 9

SPECIFICATION

Modular housing

5 This invention relates to modular housings for "DIN" -junction- and distributor boxes and for the accomodation of exchange and switchboard equipment. In view of the great demand and wide range of application for such housings simplicity and cost 10 effectiveness are highly significant factors.

The primary object of this invention resides in creating a housing system which enables any desired housing size to be produced in the simplest conceivable manner by adding or taking away individual elements.

According to the invention there is provided a modular housing for DIN-junction and distributor-boxes and for the accomodation of exchange and switchboard equipment having a base unit and a lid unit adapted to be made up to the required housing dimensions from snap-fitting unit elements of suitable size without the aid of further connecting elements, the housing being suitable for surface-as well as for concealed wall-mounting applications, and 25 arranged for assembly to make up housing systems which perform in the manner of a single housing simply by the omission or exchange of elements of the lid units, each lid unit being individually removable.

30 The assembly method which can be carried out by this apparatus enables certain parts of the equipment housed in the assembled housing system to remain protected by lockable lids and other parts to be made accessible through non lockable removable 35 lids.

An embodiment of the invention is illustrated by way of example in the accompanying drawings wherein:

40 Figure 1 is a perspective view of the housing system with base-and lid units constructed in accordance with the invention;

Figure 2 shows the resilient engagement between lid and base unit;

45 Figure 2a shows the cruciform-recessed snap element of the lid unit but omitting the base unit as viewed in the direction of arrow in Figure 2,

Figure 2b shows the intermediate member with resilient fit and securing means relative to the base unit;

50 Figure 3, is a front elevation of an adaptor with bore and snap-device,

Figure 3a is a section through the adaptor taken on the line B-B in Figure 3,

55 Figure 3b is a side view of the adaptor according to Figure 3,

Figure 4 shows the adaptor snap-fitted on the base unit,

Figure 5 is the top view corresponding to Figure 4, partly revealing the snap-fit socket matrix,

60 Figure 6 is a section of the lid unit and extension element in snap-fitted engagement,

Figure 7 is a perspective view of the lid unit and the extension element with their respective connecting elements,

65 Figure 8 is a top view of the snap-fit engagement

between the lid units,

Figure 8a is a section of the snap-fit engagement between the lid units in interfitted condition according to Figure 8; and

70 Figure 9 is a section of the snap-fit engagement of the base units,

Figure 1 shows the base unit 1 on top of which a snap fit socket matrix 3 is built up in accordance with existing snap-fit parts of the equipment to be housed, this matrix 3 being continued without interruption when several base units 1 are joined up in line and mutually connected, as shown in Figure 9, by means of snap-fit devices 2 provided at the edge of each base unit 1.

75 Furthermore, as shown specifically in Figure 5, the said matrix 3 comprises securing bosses 3c having holes or bores 3a for the reception therein of suitable fastener elements such as for instance, self-tapping screws, and four peripheral notches 3b on each securing boss 3c which enable further auxiliary

80 elements- such as for example an adapter 4- to be snap-fitted thereon without aid of tools whilst grooves provided in the surface of said bosses prevent rotation of such auxiliary elements.

85 Figures 3, 3a, 3b and 4 show such an adapter 4 which on one side thereof is provided with snap means 4a for snap fit engagement with the base unit 1 whilst the opposite side is provided with

90 C-channel-type profiles 4b adapted to receive sliding nuts, the adapter being further provided with a bore 4d enabling it, if necessary and after removal of the snap means 4a, to be secured to the securing bosses 3c of the base unit 1 by means of suitable fastener elements such as, for example, self-tapping screws.

95 100 As shown in Figure 3c, it is also possible for a plurality of adapters to be adapted to be stacked vertically by snap-fit engagement, in line or also relatively offset through 180°. In that case the snap device 4a of the upper adapter 4 snaps into the bore 4d of the lower adapter 4.

105 Due to this provision the distance between the bottom or base and the mounting plane may be increased at will so that there is sufficient space, for example, for cable shunting.

110 115 It is equally possible to snap-fit several adapters in longitudinal succession on the base unit 1 thereby creating a continuous bar of any desired length so that the matrix of the base elements can be bridged with the aid of the sliding nuts. The adapter 4 is so designed that the distance between socket bores in the matrix agrees with the distance between bores of a plurality of longitudinally lined up adapters 4.

120 As shown in Figures 2, 2a and 2b, the base units 1 include in the vicinity of their edges, additional

125 receiving elements in the form of suitable bores 11 with undercut walls for lid-securing purposes, wherein cruciform recessed snap elements 10 engage thus affording a quick and easy way of securing the lid to the base unit.

130 125 If, on the other hand, the lid unit 5 is required to be independent of the bores 11 provided in base unit 1, an intermediate member 8 will be used, as shown in Fig. 2b.

The intermediate member 8 can be secured to the

securing bosses 3c of base unit 1 through suitable

- securing bores 8a and by means of suitable fastener elements, such as self-tapping screws 9, at any point in the base unit plane which is laterally offset in any direction by a distance corresponding to one half of
- 5 the matrix grid index or socket spacing and unrestrictedly applicable for all corners by virtue of a suitable symmetrical design.

As shown in Figures 1, 2b and particularly in Figure 9, the connection between two base units 1 is 10 made by means of a snap-fit device 2 consisting of a marginal lip 2a and a snap-groove 2b formed on each base unit 1.

Thus, when two base units 1 are fitted together a double connection is obtained which can only be 15 released with the aid of a tool, for example by pushing a screw driver through the hole 2d and pushing the catch lugs 2c out of the way to release the snap-fit connection.

It will further be observed from Figure 1 that the lid 20 unit 5 comprises at least four lid elements 5a and that the size and height of the housing can be increased by application of the principle of inserting a flat lid element 5c and an angle element 5b, the lid corner elements 5a and the lid angle elements 5b being further provided, as shown in Figures 6 and 7, 25 with additional means 7b, 7e arranged on the under-ides of their lateral edges which enable a stable, tool-less connection with extension elements 7 to increase the lid height.

30 Figures 6 and 7 further show that each extension element 7 has a recess 7a adapted to receive the lug 7b and a pin 7d which is pivotable over a film-hinge 7c, whilst hooks 7e are provided on the lid unit 5 to stabilise the extension elements 7 when mounted: 35 For assembling these parts the pin 7d must be pivoted to enable introduction of lug 7b. The pin 7d is then pushed back into its initial position to prevent disengagement by extraction of lid unit 5 and extension element 7.

40 As shown in Figures 1, 6 and 7, the lid corner- and the lid angle elements 5a, 5b and the extension element 7 are provided with a square grid 5' for breaking out cables.

This grid is so chosen that preferably all the widths 45 of lid corner-and lid angle elements 5a, 5b fall on a grid line.

Figures 1, 8 and 8a further show the provision of snap-devices 6 for the lid units 5 which afford a no-tool interlocking connection between the lid corner- 50 lid angle- and flat lid elements 5a, 5b and 5c. Figure 8a shows that the snap device 6 comprises a marginal lip 6a and a snap-fit groove 6b with snap hooks 6c engaging in holes 6d when the parts are fitted together.

55 As in the case of the base units this interlocking snap-fit connection can be released only with the aid of a screwdriver.

As shown in Figure 1, the base unit 1 is also provided with suitable bores 18 for wall mounting.

60 CLAIMS

1. A modular housing for DIN junction-and distributor- boxes and for the accomodation of exchange and switchboard equipment, having a base unit and a lid unit adapted to be made up to the 65 required housing dimensions from snap-fitting unit

elements of suitable size without the aid of further connecting elements, the housing being suitable for surface- as well as for concealed wall-mounting applications, and arranged for assembly to make up 70 housing systems which perform in the manner of a single housing simply by the omission or exchange of elements of the lid units, each lid unit being individually removable.

2. A modular housing according to claim 1, 75 wherein the individual modular housings can be individually and relatively independently locked or sealed.

3. A modular housing according to claim 1, in 80 accordance with given appliance-fitting patterns and that this matrix is un-interruptedly continued when a plurality of base units are joined up, the base units being provided with marginal snap-fit means for their mutual interlocking connection.

4. A modular housing according to claim 3, 85 wherein the socket matrix includes securing bosses with holes adapted to receive suitable fastener means, said bosses being provided with four peripheral notches enabling the snap-fit engagement thereon without aid of tools of further auxiliary elements such as adaptors and comprising surface grooves which prevent rotation of such auxiliary elements.

5. A modular housing according to claim 4, 95 including an adaptor which is provided on one side thereof with snap-fit means for mounting it on the base unit and on the opposite side with C-channel-type profiles adapted to receive sliding nuts, the adaptor being further provided with a bore allowing it to be secured, and involving the removal of the snap-fit means, on the securing bosses of the base unit by means of suitable fastener elements.

6. A modular housing according to claim 5, 100 wherein several adaptors are adapted to be stacked vertically above each other in snap-fit engagement, in line or relatively offset by 180° in each successively stacked pair, in which case the snap-fit means of an upper adaptor snap into the bore of a lower adaptor.

7. A modular housing according to claim 4 or 5, 110 wherein several adaptors can be snap-fitted in a longitudinal row, one behind the other on the securing bosses to form a continuous bar of any desired length.

8. A modular housing according to claims 1 or 2, 115 wherein the base units, in the vicinity of their marginal edges, are provided with additional receiving means in the form of suitable bores with undercut walls adapted to receive a cruciform-recessed snap-fit element for securing the housing lid unit.

9. A modular housing according to claim 8, 120 including an intermediate member for securing the lid unit independantly of the undercut bores provided in the base units, which, by virtue of suitable fastener holes and with the aid of suitable fastener elements can be secured to the securing bosses of the base unit at any point in the base unit plane which is laterally offset in any direction by a distance corresponding to one half of the matrix grid index 130 and unrestrictedly applicable for all corners by ver-

tue of a suitable symmetrical design.

10. A modular housing according to claim 3, in which mutual connection between any two base units is made by means of a snap-fit device comprising a marginal lip and a groove for each base unit arranged so as to make a double connection when two base units are snap-fitted together.

5 11. A modular housing according to claim 10, wherein the marginal lip is additionally provided 10 with snap-catches which are adapted to snap into matching holes.

12. A modular housing according to claim 1, in which the lid unit comprises at least four spatial corner elements and its size and height can be 15 increased on the principle of inserting an angle element and a flat lid element, the lid-corner- and lid-angle elements being provided at the edges of their undersides with additional means which enable a stable, non-tool-operable connection thereto of 20 extension elements for increasing the height of the lid unit.

13. A modular housing according to claim 12, wherein the extension elements for increasing the height of the housing include a recess adapted to 25 receive a lug and a pin adapted to be pivoted about a hinge, and a hook being arranged on the lid unit.

14. A modular housing according to claim 12, in which the lid corner- and lid angle elements as well as the extension element are provided with a 30 square-pattern matrix for breaking out cables and wires, said matrix being chosen in such a way that all the widths of lid-corner-and lid-angle-elements coincide with one grid line of the matrix and the lid units have snap-fit devices provided for non-tool operable 35 connection between lid corner-and lid-angle- and flat lid elements.

15. A modular housing according to claim 14, wherein each snap-fit device includes a marginal lip and a groove, with a hook snapping into a hole when 40 the parts are snap-fitted together.

16. A modular housing according to claim 1, in which the base unit is provided with bores to receive fastenings for wall mounting.

17. A modular housing for DIN junction and distribution boxes and for accommodation of exchange and switchboard equipment substantially as 45 hereinbefore described by way of example with reference to and as shown in the accompanying drawings.

Printed for Her Majesty's Stationery Office by The Tweeddale Press Ltd.,
Berwick-upon-Tweed, 1980.
Published at the Patent Office, 25 Southampton Buildings, London, WC2A 1AY,
from which copies may be obtained.